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COMMITTEE ON THE PEACEFUL
USES OF OUTER SPACE

INTERNATIONAL COOPERATION IN THE PEACEFUL USES OF OUTER SPACE - ACTIVITIES OF MEMBER STATES

Note by the Secretariat

Addendum

The present document contains information provided in replies received from Member States up to 13 July 1992.

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RUSSIAN FEDERATION

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I. INFORMATION ON SPACE OBJECTS LAUNCHED IN 1991

In 1991, 85 space objects of various descriptions were launched.

These space objects (with the exception of the MAK-1 satellite) were launched aboard 60 carrier rockets of the Soyuz, Proton, Cosmos, Tsiklon, Molniya and Vostok types. The MAK-1 satellite was launched from the Mir orbiting complex to investigate features of the Earth's atmosphere.

In five Cosmos series launches, a single carrier rocket was used to put several satellites into orbit simultaneously: eight on 12 February; three on 4 April; six on 17 May; six on 28 September; and six on 12 November.

II. MANNED FLIGHTS

On 7 February the manned station Salyut-7 completed its flight as part of the Salyut-7-Cosmos-1686 orbital complex. The station had been in circumterrestrial space since April 1982. After completion of its manned programme, which lasted a total of 810 days, it was used for the conduct of life-cycle tests over a period of four years.

The Mir manned scientific research station has been operating in circumterrestrial orbit since February 1986, equipped with all the essential facilities enabling people to work without interruption in extraterrestrial space.

In 1991 the station was visited by the crews of three Soviet basic expeditions (the eighth, ninth and tenth) as well as by representatives of the United Kingdom of Great Britain and Northern Ireland and Austria.

The programme of work carried out during the eighth basic expedition (cosmonauts V. Afanasyev and M. Manarov) lasted 175 days, from December 1990 to May 1991, and included geophysical, astrophysical and medical and biological research and technological, biotechnological and technical experiments.

In the final stage of the eighth basic expedition the station was visited by a mixed crew, comprising A. Artsebarsky, S. Krikalev and H. Sharman, an astronaut and research scientist from the United Kingdom. Over an eight-day period, they conducted a large number of medical and biological investigations and technological and biotechnological experiments.

V. Afanasyev and M. Manarov returned to Earth together with the British astronaut on 26 May and the work in orbit was continued by A. Artsebarsky and S. Krikalev.

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During the ninth expedition, which lasted 144 days, the astronauts carried out investigations into geophysics, astrophysics, space materials science, biology and biotechnology.

On 4 October, as the expedition neared the end of its work, the international crew on board the Soyuz TM-13 spacecraft docked with the station. A. Artsebarsky, A. Volkov, S. Krikalev, T. Aubakirov and the Austrian astronaut and researcher F. Viehboeck completed the full range of medical, biological and biotechnological experiments developed by Austrian and Kazakh scientists.

After the return to Earth of the cosmonauts A. Artsebarsky and F. Viehboeck, work on board the Mir orbital station was continued by A. Volkov and S. Krikalev. The flight programme of this expedition, the tenth in number, scheduled to last 180 days, included the conduct of a range of astrophysical, technical, medical, biological and biotechnological experiments, the photographing of Earth in the interests of various branches of the national economy and extra-vehicular activity.

In 1992, there are plans for three basic (the tenth, eleventh and twelfth) and two international expeditions (with the participation of astronauts from Germany and France) to work on board the Mir station.

III. PROGRAMMES FOR THE APPLICATION OF SPACE TECHNOLOGY

1. In 1991, work continued in the area of space meteorology and oceanography on the collection, analysis and utilization of satellite hydrometeorological information for the purpose of providing data to various branches of the national economy and improving weather forecasting. To supplement the existing system, Meteor-3 satellites were launched on 24 April and 15 August 1991 to gather global weather information (images of clouds and of ice and snow cover) in the visible and infrared bands of the spectrum and to measure radiation levels in circumterrestrial space.

Information from the satellites is relayed to the main and regional processing centres of the Russian Committee on Hydrometeorology and to automatic receiving stations; the information is transmitted for use by regional and local weather forecasting centres and is also distributed through communications channels to other users, including foreign users.

Technology has been developed and put into operation for the remote sensing of meteorological parameters of the atmosphere on a regional scale with a spatial resolution of 80 kilometres for the Moscow receiving station for data from the Tiros Operational Vertical Sounder (TOVS) satellite of the National Oceanographic and Atmospheric Administration of the United States (NOAA).

Research was carried out in the elaboration of on-line technologies for the automated real-time analysis and quantitative interpretation of data from satellite spectrometry measurements by Meteor and NOAA satellites.

A new method was developed whereby the speed of surface winds in squall areas can be measured by analysing and processing information provided by oceanographical satellites. With the use of radar information, a systematic analysis was made of cloud features and specific aspects of the synoptic processes and terrain relief which influence the formation of hail centres. Previously undetected atmospheric formations with a convective circulation range of 200-1,500 kilometres were identified and studied.

On 6 August 1991, in accordance with the development plan for the monitoring of solar ultraviolet radiation, work was conducted on the scientific research ship Professor Zubov on the measurement of radiant fluxes in a long wave range of less than 130 nm and in the 121.6 nm band, with the use of a rocket. The result obtained is of particular importance for the continuity of data on solar radiation which affects the Earth, since no comparable measurements were being made by foreign scientists during this period.

On the basis of statistical material on the flux of protons from solar cosmic rays, gathered from satellite observations between 1964 and 1991, it was possible to determine that proton activity reached its high point in 1989.

Studies of instances of small-scale heterogeneity of energy protons from the inner radiation belt led to the finding that their emergence may be interpreted as heralding severe earthquakes.

A fundamentally new automated diagnostic and forecasting system for the state of the ionosphere was developed, tested and installed in the forecasting centre and in regional centres and made available to individual users. The system makes it possible to assess the current state of the ionosphere and radio propagation conditions, as well as to make forecasts of a short-, medium- and long-term nature. The system is designed to run both on main-frame and personal computers.

Experimental research carried out under the Combined Release and Radiation Effects Satellite (CRRES) project in 1991 into artificial formations in the ionosphere above the Caribbean yielded data from optical and radiophysical observations and measurements, making it possible to trace the evolution of large-scale ion clouds in the ionosphere, specific features of the interaction between a high-frequency neutral gas flow and ionospheric plasma, as well as the development of plasma instability and fine structures in ion clouds.

Investigations continued into the middle atmosphere and the ozonosphere above the Molodezhnaya observatory in the Antarctic, using satellites, meteorological rockets and balloon sounding. It was established that the total ozone content had reached its low point at 200 Dobson units on 27 September 1991 and increased rapidly from 30 September 1991, reaching 470 Dobson units on 19 October 1991.

2. Investigations into the natural resources of Earth were conducted in 1991 with the use of the Mir orbital station and unmanned Earth satellites of the Cosmos, Resurs and Almaz series. The Resurs subsystem, which has been in use since April 1989, remains in operation.

Space information was received and processed at the Priroda State Research and Production Centre and at the Planeta Scientific Production Centre. The distribution and sale of space information in response to orders from national and foreign users was carried out by the Soyuzkarta all-Russian union.

In 1991, four automatic retrievable Earth satellites were launched, on 28 June and 23 July in the Resurs-F and Resurs-F1 series and on 21 May and 21 August in the Resurs-F2 series.

The first-generation Resurs-F1 Earth satellite carried on board a set of photographic apparatus: three KFA-200 cameras (with a focal length of 200 mm) working in three spectral frequency bands, 0.5-0.6 μm, 0.6-0.7 μm and 0.7-0.84 μm with a swath width of 240 km and a resolution of 25-30 m for acquisition of multi-band information; two KFA-1,000 cameras (with a focal length of 1,000 mm) working in the 0.57-0.67 μm and 0.67-0.81 μm spectral bands with a swath width of 160 km and a resolution of 8-10 m for acquisition of spectral-band photographic information from a height of 270 km and with an 82° orbital inclination. In the event of unfavourable weather conditions, satellites in this series can continue to orbit with the payload switched off. The overall operational time of the satellite in orbit is up to 30 days.

On board the second-generation Resurs-F2 satellite is an MK-4 camera for multi-band photography in four spectral bands, 0.51-0.57 μm, 0.63-0.69 m, 0.75-0.85 μm and 0.40-0.70 μm. In addition, it is possible to use interchangeable filters in the 0.46-0.50 μm and 0.58-0.80 μm spectral channels.

The local resolution of the MK-4 camera is 9-11 m with a swath width of 240 km at a survey height of 270 km. The orbital angle of inclination is 82°.

In 1991, experiments continued on board the manned Mir station with the participation of cosmonauts who carried out surveying using a hand-held Hasselblad camera in narrow areas of 5-10 nm, with a resolution of 15-25 m, in order to detect low-contrast objectives such as wood-covered circular structures, ocean pollution, soil salinity, accumulations of plankton, and so forth. Additionally, the MKf-MA and KFA-1000 fixed cameras were used, as they were during the flight by an Austrian cosmonaut in October 1991.

Experiments in the spectrometry of the surface of the Earth and the seas and oceans were made on board the Kvant-2 module docked with the Mir station, using an MKS-M2 spectrophotometer developed in Germany, a Russian infrared ITS-7D telespectrometer and television cameras fitted to a Czechoslovakian AsP-G-M revolving platform.

The Cosmos-1939 space system which was launched on 20 April 1989, continued to be used for acquisition of operational information on the Earth's natural resources using high-resolution (45 m) and medium-resolution (180 m) scanners. Information from the Cosmos-1939 satellite is received at the main and regional centres (Moscow, Novosibirsk, Khabarovsk, Tashkent-Uzbekistan). Data from the Cosmos-1939 satellite were used in carrying out international experiments to study geosystem dynamics in the Kursk region (Kursk-91 project), the condition of forest ecosystems in the Krasnoyarsk territory (Sayany-91 project) and the active volcanoes of the Kamchatka (Kamchatka-91).

On 31 March 1991 the Almaz-1 space station was launched, with an orbital altitude of 270 km and an angle of inclination of 72.8°. A radar system and ultra-high-frequency and infrared radiometers for the study of the Earth's natural resources were installed on board the station. The radar used synthesized equipment with a wavelength of 10 cm and an instantaneous field of view of 40 km and an adjustable swath width of up to 400 km, depending on the station's angle of inclination. The radar data can be recorded on the on-board memory and retransmitted to Earth through the retransmitter of the geostationary communications satellite. Information from the Almaz-1 satellite is used for solving practical problems connected with the routing of ships in the Arctic and the Antarctic, predicting agricultural crop yields from the calculation of moisture reserves in the soil and snow and ice cover, and also for studying currents, internal waves, accumulations of phytoplankton, active volcanoes and so forth.

3. In 1991, the communications and broadcasting facilities were further improved using satellite systems.

The communications networks for the transmission of information by telephone, telegraph and facsimile were modernized and extended using the Gorizont satellite.

The distribution systems for the Moskva and Ekran television programmes were successfully expanded. As many as 9,000 stations are used for television reception in these systems which are based on the Gorizont (Moskva) and Statsionar-T (Ekran) satellites.

The hardware of the Orbita ground stations was upgraded by the addition of equipment for working in the communications regime. In 1991 there were 55 such stations.

Twenty-five new receiving stations were deployed during the past year for the Moskva-Global'naya system for the transmission of television programmes to our missions abroad. The number of stations is now over 70.

Under the Intersputnik international system, there have been exchanges of television programmes and telephone links, the equipment of Earth stations has been modernized and satellite channels have been leased to foreign partners for short and long periods. Intersputnik and Intelsat communications organizations are collaborating in the exchange of television programmes and

telephone channels. Under the Intercosmos programme, cooperation has been conducted based on the Dubna-Intercosmos international experimental satellite communications centre and the national test sites of the Eastern European countries participating in the programme. Those countries have carried out research on radio-wave propagation conditions in the 10.20 and 30 GHz frequency bands using a Mayak transmitter fitted to a Gorizont satellite.

IV. WORK ON SPACE BIOLOGY AND MEDICINE

In 1991 work in this field was in two main areas:

1. Medical services for manned space flights.

2. Fundamental research for continuing in-depth study of the effects of extreme factors of space flight on the living organism and solving the practical problem of creating biological life-support systems for space crews.

Under the first heading, preparations were made and medical services provided long space flights on board the Mir space station.

The objective of the work was to solve expert diagnostic, psychoprophylactic and neurosensory problems. Means for the adaptive control of the functional condition of man in extreme conditions have been devised and improved.

New data have been obtained on the level of man's psychological capacity for work in the acute period of adaptation to space flight conditions. Data have been produced on the toleration of overload in space flights of varying length. Methods and apparatus for conducting biochemical research during space flights have been improved.

Experimental research on the radiological safety of space flights has produced findings on the variation in radiological characteristics in calm and disturbed conditions of the magnetosphere and also during periods when the orbit of the Mir satellite was penetrated by protons from solar flares with a resolution of 10 seconds.

The purpose of the in-flight fundamental research that was conducted was to study biological and morphological phenomena and processes occurring in living organisms, thereby yielding a fuller understanding of the processes of adaptation at the subcellular, cellular and systemic levels. Processing of experimental data from the flight of the Cosmos-2044 biological satellite initially showed that in monkeys the change to a condition of weightlessness is accompanied by excitation of the receptors of the vestibular canals which persists for between seven and nine days after the end of a two-week space flight. Experiments using rats demonstrated for the first time that, in conditions of weightlessness, the healing process of traumatic lesions to bone and muscle tissue is disturbed. The healing processes of lesions are significantly slowed down and the osseous callosity which formed did not

develop normally. It was also shown for the first time that the sustained functioning of a closed ecosystem (fish-chlorella-micro-organisms) is possible.

Analysis of the data from joint experiments with Bulgaria and Czechoslovakia (Svet and Inkubator, respectively), conducted in 1990 on board the Mir space station, produced important new findings which are essential for the study of methods of using plants and animals in biological life-support systems for space crews on long flights. It was demonstrated that it is possible for the full normal development cycle of an embryo (quail) to take place in conditions of weightlessness. The first fledglings were obtained, thus proving that embryogenesis occurs normally in conditions of weightlessness. It was also shown that it is possible for both the functional and the morphological aspects of vegetative growth and formative processes to occur normally in plants. For the first time a crop of radishes with a normal biomass was obtained.

The range of research conducted makes it possible to verify existing methods and to identify ways of creating new methods of prophylaxis and means of correcting the adverse effects of space flight on the human organism and to extend existing knowledge of the laws of adaptation to long space flights.

V. SCIENTIFIC SPACE RESEARCH PROGRAMMES

1. Under the Intercosmos international cooperation programme, the Intercosmos-25 Earth satellite was launched on 18 December 1991 from the Plesetsk cosmodrome. On 28 December of the same year the Czechoslovak Magion-3 satellite was separated from it. The scientific and telemetric apparatus was developed and prepared under the APEX project by our own scientists and specialists in conjunction with colleagues from Bulgaria, Hungary, Poland, Romania, Czechoslovakia and Germany.

Intercosmos-25 was placed in orbit with an apogee of 3,083 km, a perigee of 440 km and an inclination of 82.5 degrees. This has made it possible to conduct experiments in a broad range of parameters of ionospheric plasma and under different geophysical conditions. In particular, the satellite has spent a considerable amount of time in the high-latitude polar region at altitudes of 1,500-2,000 km, a region which is of special interest.

The satellite is equipped with an electron accelerator, a xenon plasma source and a scientific equipment complex capable of determining the density and temperature of cold ionospheric plasma as well as its ionic composition, measure the spectra and angular distribution of energy electrons and ions, measure quasi-constant electric and magnetic fields, determine the spectra of the components of electric and magnetic fields in a broad range of frequencies and conduct an amplitude and spatial analysis of optical radiation spectra. The Magion-3 subsatellite is equipped with telemetry for adjusting the propulsion system, an energy supply system and a scientific equipment complex for taking measurements of practically the same set of physical parameters as on the main satellite.

The Intercosmos-25-Magion-3 system is used in active experiments conducted in space: the phenomena involved in the active interaction of plasma with the Earth's ionosphere and magnetosphere are studied by means of the satellite scientific equipment. Coordinated ground-based observations of these phenomena are conducted simultaneously.

2. The hook-up in 1991 of the scientific instruments on board the Roentgen observatory installed on the Kvant-1 module of the Mir orbital station demonstrated that they are fully serviceable (the observatory's instruments were not hooked up for a long period of time because of the complicated work of guiding the Mir station in asymmetrical configuration). In 1991, the Roentgen observatory conducted more than 40 observation sessions of the Vela X-1 pulsar, the field of the Large Magellanic Cloud and also the GRSO 831-429 source discovered by the Granat observatory, and at the same time located a previously unknown pulsar with a period of 12 seconds.

3. In 1991, the Granat astrophysical observatory continued to operate actively in space, transmitting unique scientific information to Earth. Its instruments can construct images of sections of the celestial sphere, analyse the energy spectra of X-ray sources, observe bright X-ray sources, detect new transient sources and investigate gamma bursts. By processing the scientific information, interesting results can be otained from observations of X-ray sources in the 2 KeV to 100 MeV range.

4. Observations on board the Gamma observatory have also continued. By means of the Gamma-1 gamma telescope, observations were conducted of gamma pulsations in the Vela constellation, the dual system in the Cygnus constellation (Cygnus X-3), the Hercules X-1 X-ray pulsar, the Geming gamma source and also the Sun.

5. During 1991, scientific data were received from the Intercosmos-24 satellite launched in 1989 under the Aktivny project. The processing and analysis of these data yielded a number of interesting results: an electrostatic low-frequency turbulence-generation effect taking place when a very-low-frequency generator is operating and an electron-energizing effect occurring in the vicinity of a spacecraft were detected; specific dynamic very-low-frequency signal spectra connected with the earthquake that occurred in Iran on 21 June 1990 were recorded for the first time; a simultaneous increase in plasma density and the amplitude of low-frequency oscillations was recorded when xenon gas was injected from a satellite, etc. Work was also carried out on monitoring the state of the ionosphere in order to detect changes in it connected with activity on Earth.

6. Research continued into the solar system's planets and small bodies on the basis of data obtained from spacecraft launched earlier: Venera-15, Vega-1 and -2, and Phobos-2. The latest results relate primarily to cloud cover and sulphur dioxide content in the atmosphere of Venus, photochemical processes, the characteristics of the aerosol parameters and the gas and chemical composition of the atmosphere of Mars (for example, formaldehyde was identified for the first time in its atmosphere), the correlation between the

crystallization water absorption belt and the geological characteristics of the surface of Mars and so forth.

VI. INTERNATIONAL COOPERATION

1. Work in the field of cooperation in outer space was conducted with scientific and industrial organizations and enterprises of Bulgaria, Cuba, Czechoslovakia, Germany, Hungary, Mongolia, Poland, Romania and Viet Nam (within the framework of the Intercosmos programme), and also of France, China, India, the United States, Sweden, Finland, Austria, Canada, the United Kingdom, Italy, Ireland, Netherlands, Belgium, Denmark, Switzerland, Australia, Greece, Japan and the European Space Agency.

On 4 July 1991, a bilateral intergovernmental agreement was signed in Moscow with Mexico on cooperation in the exploration and peaceful use of outer space.

The regular conference of leaders of national coordination agencies under the Intercosmos programme was held in April 1991 in Moscow. The participants recognized the need to continue work in accordance with the Agreement on Cooperation in the Exploration and Peaceful Use of Outer Space, signed on 13 July 1976.

Under the Intercosmos programme, meetings were held in 1991 of the working groups on space biology and medicine (in Saint Petersburg), on space meteorology (in Poland) and on remote sensing of the Earth (in Germany).

Russian and French specialists discussed the results of cooperation and plans for the next few years at their regular annual conference, held in September 1991 in Tours. More than 100 scientists and specialists from the two countries took part in a seminar on the results of the Granat project organized by the National Space Research Centre of France.

Work was actively carried out under the cooperation programme with the United States. Meetings of working groups were held in Moscow - on space astronomy, solar and terrestrial physics, and research into the solar system; in Saint Petersburg - on space biology and medicine; and in the United States (the state of Maine) - on Earth sciences. The Progress cargo vehicle delivered on board the Mir station heavy nucleus collectors produced in the United States (under the Trek project), which were mounted on the outer surface of the Mir station during extravehicular activity by the cosmonauts. Preliminary reports were exchanged and medical and scientific data obtained during flights on board the Mir station and the Space Shuttle reusable spacecraft in 1990-1991 were then discussed.

The Meteor-3 satellite, launched on 15 August 1991, is fitted with TOMS equipment (United States of America) which is intended for the mapping of total ozone content. Information from the TOMS equipment is received at information receiving points in the Russian Federation (Obninsk) and in the

United States of America (Wallops Island). Preliminary analysis of the data has confirmed their reliability and comparability with data currently being received from the TOMS Nimbus-7 satellite. The data received are already making it possible to monitor the characteristics of ozone behaviour above the northern hemisphere and the dynamics of the development of the ozone hole over the Antarctic. It is intended by means of further work with the TOMS equipment, together with research to confirm the data received, to carry out a number of scientific tasks, including the analysis of the possible climatic consequences of depletion of the ozone layer.

A bilateral experiment was conducted in Kamchatka for the study of active volcanoes. The findings of the experiment are being processed at the Insititute of Vulcanology of the Academy of Sciences and at the Jet Propulsion Laboratory (United States of America).

The Institute of Applied Geophysics of the Russian Committee on Hydrometeorology, which since 1975 has been operating as the regional warning centre (RWS) for Europe and Asia of the International Ursigram and World Day Service (IUWDS), is continuing with the international exchange of observation data with RWS on forecasts and storm-warnings on significant heliogeophysical phenomena: Paris (France), Darmstadt (Germany), Boulder (United States of America), Tokyo (Japan) and Sydney (Australia). An important part is played in the observation data for this exchange by regular measurements of streams of penetrating radiation in circumterrestrial space obtained from the Meteor-2 and Meteor-3 space systems.

Space cooperation with Germany is taking place in accordance with the first programme under the agreement of 25 October 1988 between the Academy of Sciences and the Federal Ministry of Scientific Research and Technology of the Federal Republic of Germany. In connection with the formation of a united Germany, supplements to the first programme of collaboration were prepared, taking into account joint research conducted with the former German Democratic Republic. In December 1991 a general programme of bilateral cooperation with Germany was discussed in Bonn.

The Foton satellite was launched in September 1991 and carried on board 10 specimens for growing protein crystals prepared by the European Space Agency.

In May 1991, the fourth Forum of Space Agencies took place in Moscow for the preparation and holding of International Space Year. Representatives of over 30 countries and of space agencies abroad took part in the work of the Forum.

Our representatives took part in the COSPAR and IAF meetings in Paris in March 1991 and also in the meetings of the programme committees of those organizations. About 40 of our representatives took part in the work of the forty-second congress of IAF, held in Montreal in October 1991. Thirty-five reports were presented on current issues in space science and space-rocket technology.

2. Under the bilateral intergovernmental agreement with Austria, a space flight on board the Mir space station took place from 4 to 10 October 1991 with an international crew consisting of the cosmonauts A. Volkov, T. Aubakirov and the Austrian F. Viehboeck under the programme of the Austromir project.

Under the scientific and technical programme of the Austromir project, approved in 1989 by Glavcosmos and the Intercosmos Council of the Academy of Sciences, on the one hand, and by the Federal Ministry of Scientific Research of Austria, on the other, 14 experiments have been conducted on the following subjects: medicine and physiology, physics and the study of materials, and remote sensing of the Earth.

Ten experiments have been conducted in medicine and physiology prepared by scientists from both countries in the fields of neurophysiology, the motor cortex, the cardiovascular and psycho-physiological systems, the metabolism, dosimetrics as well as genetic investigations in the pre- and post-flight period. For the conduct of these experiments the Austrian side with the participation of our own specialists developed the MONOMIR, MOTOMIR, OPTOVERT, AUDIOMIR, KOMO, VENA, PROTEINOMER and DOSIMIR equipment. The central DATAMIR system was created in order to provide computer support for the experiments; it handled the conduct of experiments, the acquisition of data, their recording on a streamer and the onward transmission of data to Earth by telemetry.

In the future, the equipment that has been developed may be used for on-board systems for monitoring cosmonauts' neurological, physical, circulatory, psychic and metabolic condition.

Two experiments, MIGMAS and LOGION, were conducted in physics and the study of materials.

The purpose of the MIGMAS experiment was to produce apparatus for the microanalysis of materials under conditions of microgravity and for developing new materials during long flights on board future manned satellites.

The LOGION experiment was conducted in order to study the technological parameters of liquid metal ion sources under conditions of microgravity and the optimum constructional design of devices for removing the electrostatic charge from the working surfaces of spacecraft.

The results of these experiments will make it possible to improve equipment and programming standards for similar research.

The FEM experiment involved remote Earth sensing. Using the equipment on board the MIR space station (MKF-6MA, MKS-M2, FAZA), multi-level measurements were made of the space spectrometric and spectroenergetic characteristics of the territory of Austria and of the atmosphere in order to fine-tune remote-sensing methods.

The joint reearch programme was fully completed. In accordance with the agreement reached, our own cosmonauts continued to work on the majority of the experiments under the Austromir project after the completion of the joint flight.